

GLOBAL COMPANY... LOCAL SUPPORT

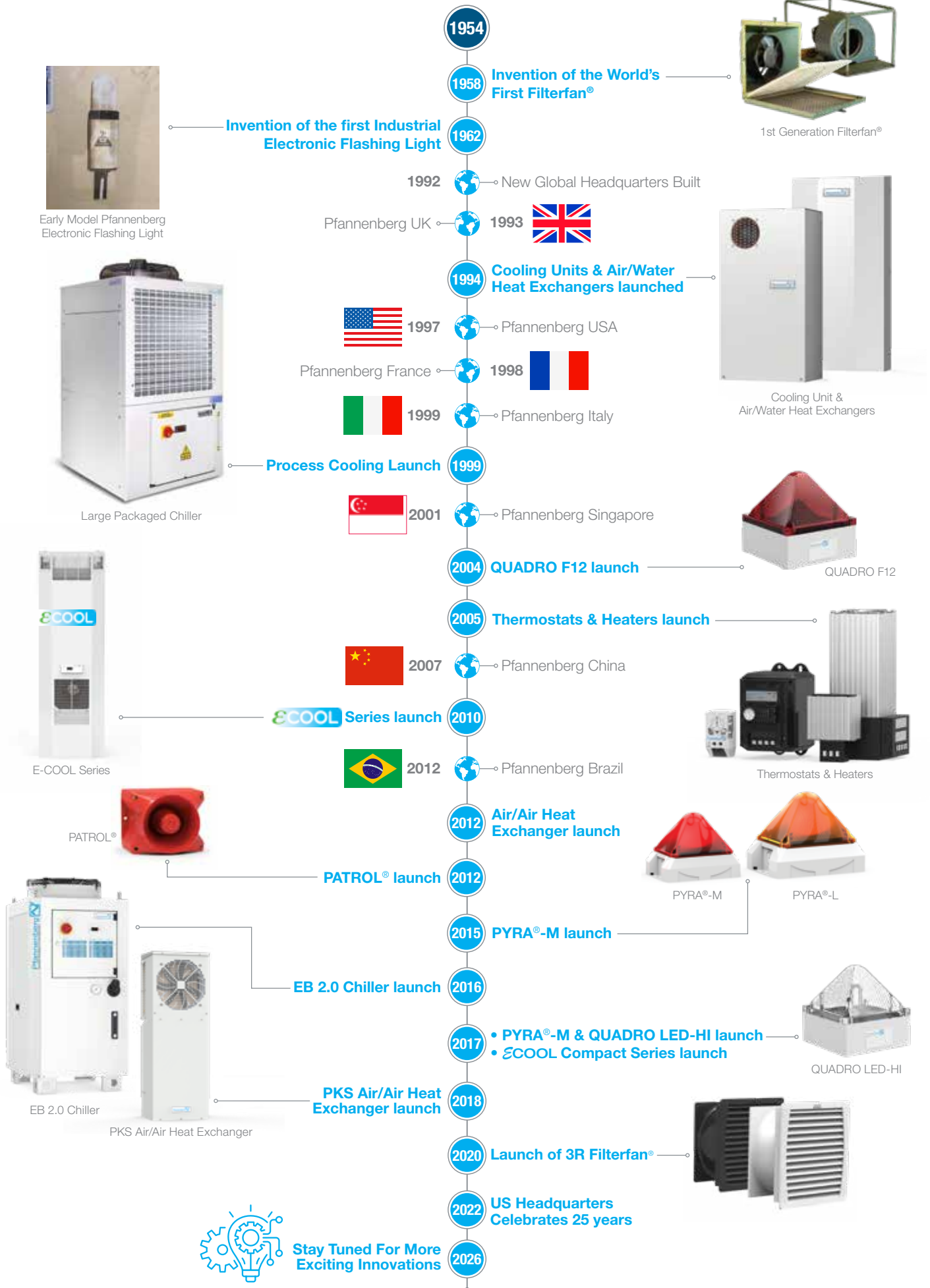
Pfannenberg
ELECTRO-TECHNOLOGY FOR INDUSTRY



AUTOMOTIVE / FOOD & BEVERAGE / INDUSTRIAL REFRIGERATION / MARINE / INDUSTRIAL AUTOMATION



COMPANY FOUNDATION



Why You Can Trust Us

PERFECT SOLUTIONS FOR COMMERCIAL BAKERIES

Pfannenberg provides complete turnkey solutions for multi-national supermarket bakery manufacturing. Supermarket's across the country are striving to have their own brands and fresh baked products available throughout their stores. To keep up with demand, downtime is not an option. Pfannenberg was invited to investigate why systems were failing and to specify the most effective and reliable thermal management solution.

Pfannenberg discovered that several AC cooling units were undersized as much as 25%, based on the real heat load. In addition, failure was high due to contamination inside the enclosures. The annual cost of these undersized and under performing cooling units was over \$20,000 annually, per bakery!

The Pfannenberg solution, which included dozens of economical and robust PWS 3000 Series Air/Water Heat Exchangers, provided a return on investment (ROI) of just 1 year. In addition, each bakery was also able to apply for energy rebates from their local utility since the PWS solution was so energy efficient.

- Energy Efficient – ROI was less than 1 year
- Maintenance-Free Design – longer life and less downtime
- Elimination of any contamination inside enclosures and elimination of overheating
- NEMA 4/4X rating – washdown safe

“Since the installation we have had no issues and the installation is working perfectly. This is quite an upgrade from Air Conditioning units that were not keeping the drives cool and causing shutdowns on the line. We have not had any issues with our drives tripping as we did with the (previous) Air Conditioning units.” – Commercial Bakery, Maintenance Manager



PACKAGED CHILLER SOLUTION FOR METAL FORMING MACHINES

A international original equipment manufacturer (OEM) required solutions to provide cooling of large servo motor drives – for equipment providing 60 to up to 1600 tons of pressure! The drive systems generate a tremendous amount of heat, which required a robust and economical thermal management solution.

After consultation and a thorough thermal engineering analysis, the Pfannenberg EB series of packaged chillers were selected. The EB series, in conjunction with the Pfannenberg PWS Air/Water Heat Exchangers, were utilized to keep motor drives cool and running efficiently. The added benefit in selecting the EB series was the simplicity of integration, for the equipment engineering team.

Following the standardization of the EB chillers, the OEM shared why they partnered with Pfannenberg:

- Easy to Implement – Wide range of standard EB chillers for the OEM's wide product offering
- Small Footprint – EB series of chiller offers the smallest footprint
- Lead Time – Shipping from stock for “Just In Time” implementation
- Global Support – Easy to get local support, anywhere in the world, and with Pfannenberg added value of annual service contracts
- Best Value – The overall value of the Pfannenberg EB solution was the most economical



Why You Can Trust Us

SIGNALING ALARMS KEEP WATER TREATMENT PLANT EMPLOYEES SAFE

Pfannenberg provides signaling alarms (alarm horns and strobes) to Wastewater Treatment Facilities as part of Gas Detection Alarm Systems. Wastewater treatment is a very dangerous business and providing robust notification is critical to employee safety – chlorine gas leaks can be very lethal!

Safety managers are always exploring ways to make their plants safer. Fortunately, Pfannenberg offers a world-leading and easy to use solution – the PATROL Signaling Alarms. When safety is paramount and every second matters, the PATROL system will provide the notification needed. In a real-world installation, the PATROL alarm system activated during a potentially life-threatening chlorine leak and could be heard a mile away from the facility! Fortunately, the chlorine leak was very minor and everyone had plenty of life-saving notification.

The PATROL Signaling Alarms are used in many applications around the world to notify personnel – visually with the strobe light and audibly with the intense and programmable alarm horn. The Pfannenberg solution is priceless...every life matters!



GUARANTEEING EQUIPMENT UPTIME FOR LEADING AUTOMOTIVE MANUFACTURER

A global automotive manufacturer had a very expensive problem – which they estimated cost nearly \$10,000 per minute of unexpected plant down-time. They had a real problem and Pfannenberg has a perfect solution!

Pfannenberg tailors services packages for customers big and small. And in this instance, Pfannenberg developed a comprehensive System Installation, Preventative Maintenance and Services program that guarantees equipment up-time and lengthened the warranty to 10-years!

When partnering with Pfannenberg and choosing the most effective service package, you can rest assured your plant will continue running and producing your products...and your profits. In partnering with Pfannenberg, you will be in good hands with industry-leading experts that you can depend on...any place in the world and at any time, day or night.

- System Installation (Turnkey Solution) – Complete system installation and start-up through our turnkey program ensures quick and smooth installation of your new production lines.
- Preventative Maintenance – Annual to customized preventative maintenance keeps your production lines up and running all year while significantly reducing unplanned downtime...which for this automotive manufacturer cost nearly \$10,000 per minute!
- Extended Warranty – Tailored to your needs and includes parts and labor to repair or replace worn out equipment.
- Many Products Covered – Pfannenberg is well known for class-leading and long-life products with great warranties already. But did you know we'll repair and warranty competitive products too?



You've trusted in the Original...now you can trust in our Services to protect your profits for years to come!

Products & Solutions to Help You Succeed

THERMAL MANAGEMENT

Our Thermal Management products are used by some of the largest companies worldwide to keep their electronics cool and safe, protecting critical manufacturing processes.

Filterfan 4.0™

If the ambient temperature is always lower than the temperature required in the electrical enclosure, then Filterfans® represent an economical solution for thermal management of electrical enclosures. Filterfans® are the ideal solution for clean, non-hazardous environments with an acceptable ambient (outside the enclosure) temperature range.

DTS Cooling Units

Pfannenberg's DTS 3000 Series Cooling Units are driven to meet the demands of the North American NEMA market. Ideal for harsher environments with ambient air that is too warm to cool the enclosure or is contaminated with oil, particulate and conductive dusts. These units seal out the ambient air, cooling and re-circulating clean, cool air throughout the enclosure.

PKS Air to Air Heat Exchangers

When the ambient air is cool enough to use a Filterfan® but too contaminated to bring into the enclosure, our revolutionary PKS Air to Air Heat Exchangers are the perfect energy saving, lightweight and virtually maintenance free choice to cool your enclosure.

PWS Air to Water Heat Exchangers

The use of Pfannenberg Air to Water Heat Exchangers is particularly suitable where ambient temperatures are high or the atmosphere proves to be particularly oily or aggressive. Ideal for washdown areas of the plant or areas with high amounts of particulate. For applications which require local enclosure cooling using a remotely located source of refrigeration, PWS Series Air to Water Heat Exchangers provide the perfect, energy efficient solution.



Filterfan 4.0™

PWS Air to Water
Heat Exchangers

PKS Air to Air
Heat Exchanger

PROCESS COOLING

Our Liquid Cooling solutions provide the critical cooling required for manufacturing processes including machine tooling, plastic injection molding equipment, food & beverage extrusion equipment and x-ray/vision systems, to name a few.

EB Large Packaged Chillers

CCE Compact Chillers

PWS Air to Water Heat Exchangers

Our packaged and compact chillers are an ideal solution to support cooling cabinets with PWS Air to Water Heat Exchangers. The thermal management is 100% independent from the ambient temperatures at the installation location.



Products & Solutions to Help You Succeed

SIGNALING TECHNOLOGIES

Our visual and acoustic signaling devices protect personnel and equipment satisfying numerous alarm, warning, and indication requirements, including: machinery operating status, process monitoring, system startup, and building or area evacuation due to fire, toxic gas leak, chemical spill, or intruder alert.

Safety Begins With Understanding the Situation

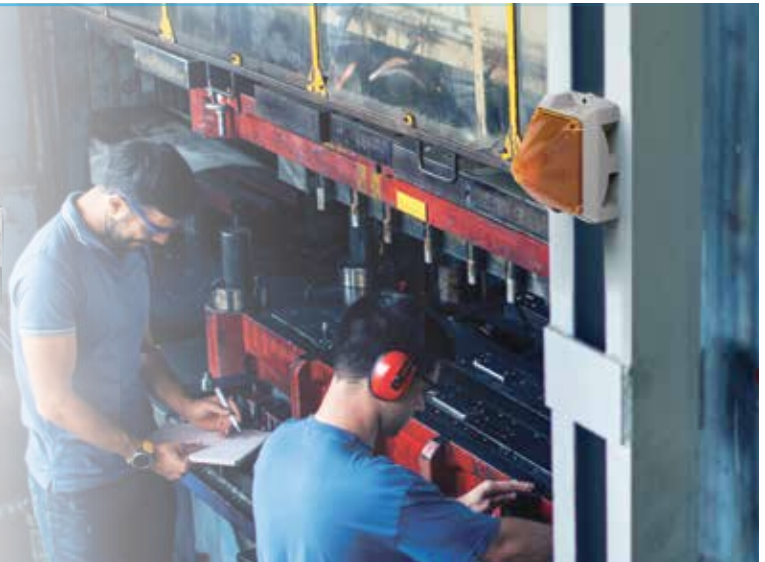


SPECIALTY
Alarms

AUDIBLE
Alarms

VISUAL
Alarms

COMBINED
Alarms



ALARM
IMMINENT DANGER



WARNING
IMPENDING DANGER



INDICATE
PROCESS NOTIFICATION

SERVICE AND SPARE PARTS

Our thermal management services are available worldwide. Our comprehensive service team is available wherever and whenever you need it. Pfannenberg's innovation has made it one of the largest globally operating manufacturers of thermal management and process cooling equipment.

Pre-Sales Services

Have a cooling question? Our comprehensive consulting approach, ensures that all of the technical and economic aspects of your thermal management solution are taken into account in order to achieve greater reliability, energy saving and cost optimization. Benefit from the knowledge shared through our global services team.

Engineering Services

From concept to the finished product Pfannenberg is your reliable partner. Need help developing a cooling solution for a large project, machine or specific industry application? Pfannenberg's engineering services include product development, climate testing, CF design and project management. We welcome every opportunity to provide innovative solutions for your most demanding applications.

After-Sales Services

We understand how critical thermal management systems are for keeping applications running and online. After sales support includes preventative maintenance programs, spare part stocking programs, onsite repair, training and regular maintenance. We offer proactive repair and replacement, our service is not limited to Pfannenberg products but also the units of all other manufacturers.



Industries We Serve

Our knowledge of supply chains and specific industry demands makes us the most sought-after partner of leading companies in industries such as automotive, machine and plant construction, energy, food and beverage, and infrastructure.

◀ INFRASTRUCTURE

We provide products and integrated solutions for applications including the construction sector (buildings, roads, tunnels), transportation (airports, shipping and cranes) and the water/waste water industries.

◀ WIND ENERGY

Our broad range of innovative thermal management and signaling solutions are used with confidence worldwide by leading wind energy system manufacturers and their suppliers.

MANUFACTURING ▶

As the inventor of the world's first and most widely recognized thermal management solution, the Filterfan®, our products have been used by some of the largest manufacturers worldwide. For over 60 years we've kept electronics cool and safe, protecting the manufacturing industry's most critical processes.

AUTOMOTIVE ▶

The world's largest automobile manufacturers and OEMs rely on Pfannenberg to provide thermal management, process cooling and signaling solutions throughout the entire manufacturing process. Our specified products and solutions can be found used in just about every automotive and supporting automotive process worldwide.



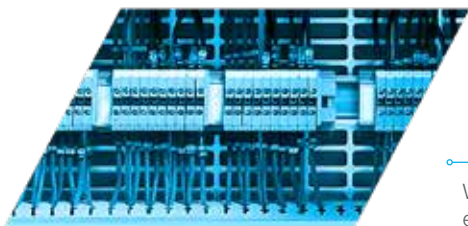
◀ FOOD & BEVERAGE

Our products are used throughout the entire food and beverage manufacturing supply chain. We offer a broad spectrum of components and solutions including filling and packaging machines, process lines, brewing technology as well as baking and meat-processing machines. We are essential to keeping this critical industry online and producing 24/7.



◀ MARINE

In an industry that encounters very harsh environments, it is crucial to be able to have a reliable tested product that will withstand such conditions. Our thermal management and signaling solutions are used worldwide throughout shipping ports and on workboats, commercial and passenger ships.



◀ INDUSTRIAL AUTOMATION

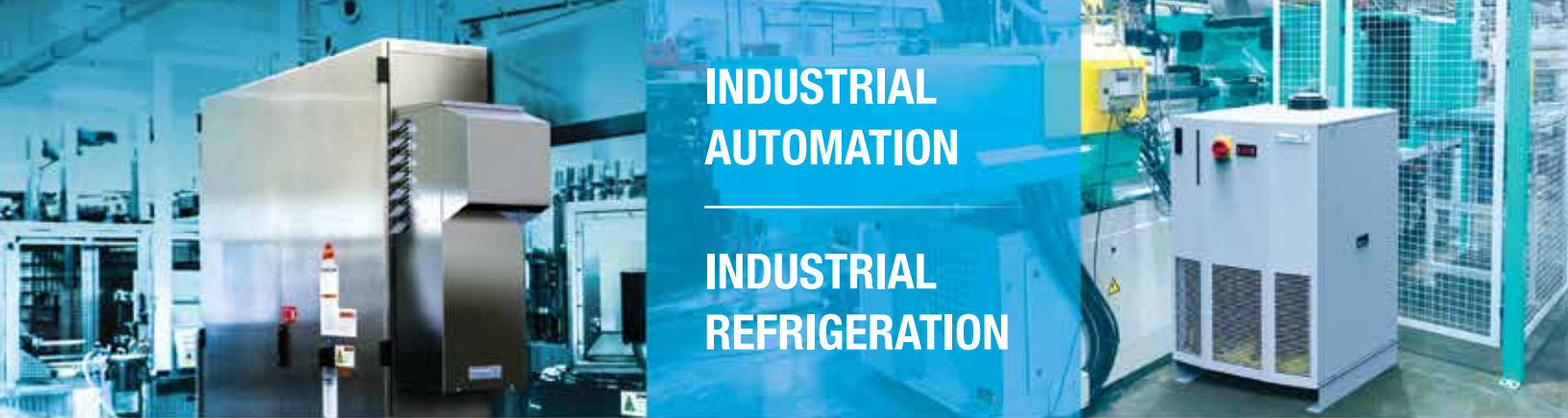
Without proper thermal management, Industrial controls and electronics can experience short-term inefficiency and shortened component lifespan leading to failure, expensive repairs and downtime. Modern day manufacturing would not be possible without the thermal management solutions provided by Pfannenberg.



◀ INDUSTRIAL DATA

The industrial revolution continues again.... Industry 4.0 is driving electronics to become smaller, housed in smaller enclosures and closer to the manufacturing floor. This presents new and unique cooling requirements as they still continue to produce heat. Our engineering and technical teams continue to push the envelope to develop new technologies to meet this revolutionary shift in electrical component integration and design.





**INDUSTRIAL
AUTOMATION**

**INDUSTRIAL
REFRIGERATION**



**FOOD &
BEVERAGE**

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MARINE

**EVERY OTHER
INDUSTRY!**



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